

CLAIMS

1 Pressing plunger mechanism (1) of a glassware forming machine (2),

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having at least one pressing plunger (72) which in normal operation can be moved axially in a reciprocating manner together with a pressing plunger receiver (71),

10 having a first displaceably disposed housing (8) which supports a first drive (9),

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having a second housing (31) which is fixed on the machine and supports a second drive (39),

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wherein a piston rod (60; 61) of a piston (58; 59) is fastened to each pressing plunger receiver (71),

wherein each piston (58; 59) can be displaced in a cylinder (56; 57) of a pressing plunger holder (45; 46),

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wherein a piston surface (74) facing away from the pressing plunger (72) is acted upon by a compressed fluid (83),

wherein the pressing plunger holder (45; 46) can be moved axially in a reciprocating manner between an inoperative position and a pressing position by the first drive (9),

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and wherein the first housing (8) can be adjusted by the second drive (39) with respect to the second housing (31) in parallel with a longitudinal axis (69) of the at least one pressing plunger (72),

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characterized in that

the pressing plunger holder (45; 46) is connected in a non-rotatable manner to a threaded spindle (17),

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that a nut (21) which can be rotationally driven by the first drive (9) is engaged with the threaded spindle (17),

5 that the nut (21) is coupled to a driven shaft (15) of an angular gear (14) and

that an input shaft (13) of the angular gear (14) can be rotationally driven by an electric servo motor (10) of the first drive (9).

10 2 Pressing plunger mechanism as claimed in claim 1,

characterized in that

15 a play-free elastic coupling (12) is disposed between the electric servo motor (10) and the input shaft of the angular gear (14).

3 Pressing plunger mechanism as claimed in claim 1 or 2,

characterized in that

20 the driven shaft (15) of the angular gear (14) is disposed coaxially with the threaded spindle (17) and

25 that the driven shaft (15) has a concentric space (18) which receives a free end (16) of the threaded spindle (17) with radial clearance all around.

4 Pressing plunger mechanism as claimed in any one of claims 1 to 3,

characterized in that

when the pressing plunger mechanism (1) has a plurality of pressing plungers (72) all pressing plunger holders (45, 46) are fastened to a common traverse (24), and

5 that the traverse (24) is connected in a non-rotatable manner to the threaded spindle (17).

5 Pressing plunger mechanism as claimed in any one of claims 1 to 4,

characterized in that

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each pressing plunger (72) and its pressing plunger receiver (71) can be coupled to each other by a longitudinally divided split ring (73),

15 that the closed split ring (73) is supported in the radial direction by a support cylinder (47; 48),

that each support cylinder (47; 48) is fastened to the first housing (8) and

20 that the angular gear (14) and the electric servo motor (14) of the first drive (9) are also fastened to the first housing (8).

6 Pressing plunger mechanism as claimed in claim 5,

characterized in that

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a displacement pick-up (75) is also fastened to the first housing (8) in parallel with the piston rod (60; 61),

30 that an actuating element (76) for the displacement pick-up (75) is fastened to the piston rod (60; 61), and

that by means of the displacement pick-up (75) electrical signals corresponding to the axial position of the associated pressing plunger (72) can be input into an evaluation circuit (77).

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7 Pressing plunger mechanism as claimed in any one of claims 1 to 6,

characterized in that

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a radially extending collar (64; 65) is fastened to each piston rod (60; 61), and

that the collar (64; 65) engages, by means of an axially parallel orifice (66), around an axially parallel pin (67) of the pressing plunger holder (45; 46).

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8 Pressing plunger mechanism as claimed in claim 7,

characterized in that

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the actuating element (76) for the displacement pick-up (75) is fastened to the collar (64; 65).

9 Pressing plunger mechanism as claimed in any one of claims 1 to 8,

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characterized in that

on its end facing away from the at least one pressing plunger (72) the first housing (8) has a projection (34) provided with an outer thread (33),

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that an inner thread (36) of an axially fixed toothed ring (37) of the second drive (39) is engaged with the outer thread (33) and

that a toothed wheel (38) of the second drive (39) meshes with the toothed ring (37).

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10 Pressing plunger mechanism as claimed in claim 9,

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characterized in that

the toothed wheel (38) can be rotationally driven in a reciprocating manner by a worm gear (41).

11 Pressing plunger mechanism as claimed in any one of claims 5 to 10,

characterized in that

the second housing (31) extends as far as the at least one support cylinder (47; 48) and

that each axial position of the first housing (8), which is adjusted by the second drive (39), can be fixed by a clamping device (52) which is fastened to the second housing (31) and cooperates with the at least one support cylinder (47; 48).

12 Pressing plunger mechanism as claimed in claim 11,

characterized in that

the first housing (8) is disposed inside the second housing (31).

13 Pressing plunger mechanism as claimed in any one of claims 11 or 12,

characterized in that

two guide rods (27, 28), which are disposed at a lateral spaced disposition from each other, are fastened to the second housing (31) in parallel with the longitudinal axis (69) of the at least one pressing plunger (72),

30 that the traverses (24) can be displaced by means of guide bushings (25, 26) on the guide rods (27, 28) and

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that the first housing (8) can be displaced by means of guide bushings (29, 30) on the guide rods (27, 28).

5 14 Pressing plunger mechanism as claimed in any one of claims 11 to 13,

characterized in that

10 in parallel with the longitudinal axis (69) of the at least one pressing plunger (72) at least one supply pipe (80; 81) for pressing plunger cooling air (82) and for the compressed fluid (83) is fastened to a region of the second housing (31) facing away from the at least one pressing plunger (72) and

15 that a telescopic pipe (84; 85), which is fastened to the traverse (24), passes into each supply pipe (80; 81) in a sealed manner.

15 Pressing plunger mechanism as claimed in claim 14,

characterized in that

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the at least one supply pipe (80; 81) and the at least one telescopic pipe (84; 85) are disposed between the guide rods (27; 28).